

Sub
or in which

cr

R¹ is (C₁-C₈)-alkyl, which can be substituted by one or more identical or different substituents chosen from hydroxyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkyl-S(O)_m-, R⁵R⁶N and aryl; (C₃-C₉)-cycloalkyl, which can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino; or a radical of a 5-membered to 7-membered saturated heterocyclic ring that contains one or two identical or different hetero ring members chosen from O, NR⁷ and S(O)_m and that can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl and aryl-(C₁-C₄)-alkyl-;

and

R² is hydrogen, (C₁-C₈)-alkyl, which can be substituted by one or more identical or different substituents chosen from hydroxyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkyl-S(O)_m-, R⁵R⁶N and aryl; (C₃-C₉)-cycloalkyl, which can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino; or the radical of a 5-membered to 7-membered saturated heterocyclic ring that contains one or two identical or different hetero ring members chosen from O, NR⁷ and S(O)_m and that can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl and aryl-(C₁-C₄)-alkyl-; or

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

R^1R^2N is a radical, bonded via a ring nitrogen atom, of a 5-membered to 7-membered saturated heterocyclic ring that, in addition to the nitrogen atom carrying the radicals R^1 and R^2 , can contain a further hetero ring member chosen from O, NR^7 and $S(O)_m$ and that can be substituted by one or more identical or different substituents chosen from (C_1-C_4) -alkyl, hydroxyl, (C_1-C_4) -alkoxy, R^8R^9N , hydroxycarbonyl, (C_1-C_4) -alkoxycarbonyl and R^8R^9N-CO- ;

Sub
01
C1
 R^3 is phenyl, which can be substituted by one or more identical or different substituents chosen from halogen, (C_1-C_4) -alkyl, phenyl, CF_3 , NO_2 , OH, $-O-(C_1-C_4)$ -alkyl, $-O-(C_2-C_4)$ -alkyl- $O-(C_1-C_4)$ -alkyl, (C_1-C_2) -alkylenedioxy, NH_2 , $-NH-(C_1-C_4)$ -alkyl, $N((C_1-C_4)-alkyl)_2$, $-NH-CHO$, $-NH-CO-(C_1-C_4)$ -alkyl, $-CN$, $-CO-NH_2$, $-CO-NH-(C_1-C_4)$ -alkyl, $-CO-N((C_1-C_4)-alkyl)_2$, $-CO-OH$, $-CO-O-(C_1-C_4)$ -alkyl, $-CHO$ and $-CO-(C_1-C_4)$ -alkyl;

R^4 is (C_2-C_5) -alkyl, trifluoromethyl or phenyl, which can be substituted by one or more identical or different substituents chosen from halogen, (C_1-C_4) -alkyl, phenyl, CF_3 , NO_2 , OH, $-O-(C_1-C_4)$ -alkyl, $-O-(C_2-C_4)$ -alkyl- $O-(C_1-C_4)$ -alkyl, (C_1-C_2) -alkylenedioxy, NH_2 , $-NH-(C_1-C_4)$ -alkyl, $N((C_1-C_4)-alkyl)_2$, $-NH-CHO$, $-NH-CO-(C_1-C_4)$ -alkyl, $-CN$, $-CO-NH_2$, $-CO-NH-(C_1-C_4)$ -alkyl, $-CO-N((C_1-C_4)-alkyl)_2$, $-CO-OH$, $-CO-O-(C_1-C_4)$ -alkyl, $-CHO$ and $-CO-(C_1-C_4)$ -alkyl;

R^5 and R^6 are identical or different radicals chosen from hydrogen and (C_1-C_4) -alkyl; or the group R^5R^6N is a radical, bonded via a ring nitrogen atom, of a 5-membered to 7-membered saturated or unsaturated heterocyclic ring that, in addition to the nitrogen atom carrying the radicals R^5 and R^6 , can additionally contain as a further hetero ring member an oxygen atom, a group $S(O)_m$ or a nitrogen atom and that can carry on ring carbon atoms

one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino and that can carry on a ring nitrogen atom a radical R⁷;

R⁷ is hydrogen, (C₁-C₄)-alkyl, aryl-(C₁-C₄)-alkyl-, hydroxy-(C₁-C₄)-alkyl, hydroxycarbonyl-(C₁-C₄)-alkyl-, ((C₁-C₄)-alkoxycarbonyl)-(C₁-C₄)-alkyl, R⁸R⁹N-CO-(C₁-C₄)-alkyl-, R¹⁰-SO₂- or aryl; where R⁷, if this group is present on a piperazino radical representing R¹R²N, cannot be carbocyclic aryl or carbocyclic aryl-(C¹-C⁴)-alkyl;

R⁸ and R⁹ are identical or different radicals chosen from hydrogen and (C₁-C₄)-alkyl;

R¹⁰ is (C₁-C₄)-alkyl, aryl or R⁸R⁹N;

aryl is phenyl, naphthyl or heteroaryl, all of which can be substituted by one or more identical or different substituents chosen from halogen, (C₁-C₄)-alkyl, phenyl, CF₃, NO₂, OH, -O-(C₁-C₄)-alkyl, O-(C₂-C₄)-alkyl-O-(C₁-C₄)-alkyl, (C₁-C₂)-alkylenedioxy, NH₂, -NH-(C₁-C₄)-alkyl, -N((C₁-C₄)-alkyl)₂, -NH-CHO, -NH-CO-(C₁-C₄)-alkyl, -CN, CO-NH₂, -CO-NH-(C₁-C₄)-alkyl, -CO-N((C₁-C₄)-alkyl)₂, -CO-OH, -CO-O-(C₁-C₄)-alkyl, -CHO and -CO-(C₁-C₄)-alkyl;

heteroaryl is the radical of a monocyclic 5-membered or 6-membered aromatic heterocycle or of a bicyclic 8-membered to 10-membered aromatic

Sub
D1
CX

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

heterocycle, each of which contains one or more identical or different ring heteroatoms chosen from N, O and S;

m is 0, 1 or 2;

or a stereoisomeric form of a compound of formula I,

Sub
D1

or a mixture of stereoisomeric forms of compounds of formula I in all ratios,

or a physiologically tolerable salt of a compound of formula I,

or a physiologically tolerable salt of a stereoisomeric form of a compound of formula I;

CI

compounds of the formula I being excluded in which, simultaneously, R⁴ is ethyl, tert-butyl, or trifluoromethyl; R³ is phenyl, which can be substituted by one or two identical or different substituents chosen from halogen, OH, -O-R¹¹ and CF₃, R¹R²N is R¹¹-NH-, (R¹¹)₂N- or R¹²R¹³N-(CH₂)_p-NH-; p is 2 or 3; R¹¹ is saturated unsubstituted (C₁-C₄)-alkyl; and R¹² and R¹³ are identical or different radicals chosen from hydrogen and R¹¹ or the group R¹²R¹³N is a radical, bonded via a ring nitrogen atom, of a 5-membered or 6-membered saturated heterocyclic ring that, in addition to the nitrogen atom carrying the radicals R¹² and R¹³, can additionally contain as a further hetero ring member an oxygen atom, a sulfur atom or a nitrogen atom and that can be substituted by an aryl substituted by one or two identical or different substituents chosen from halogen, OH, -O-R¹¹, and CF₃.

15. A process for the preparation of at least one compound of claim 5, which comprises activating a 4-hydroxypyrimidine of the formula IV and then reacting it with an amine of a formula VI;

CI
Sub
D4

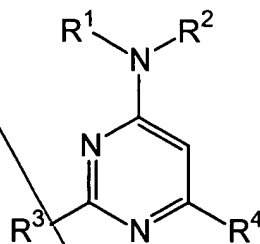
Sub
D4

and optionally reacting the resulting product with a suitable reagent to form a pharmaceutically acceptable salt.

22. A method of treating a cardiovascular disorder, comprising administering to a patient in need thereof an effective amount of at least one compound of formula I,

Sub
D5

C3



in which

R¹ is (C₁-C₈)-alkyl, which can be substituted by one or more identical or different substituents chosen from hydroxyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkyl-S(O)_m⁻, R⁵R⁶N and aryl; (C₃-C₉)-cycloalkyl, which can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino; or a radical of a 5-membered to 7-membered saturated heterocyclic ring that contains one or two identical or different hetero ring members chosen from O, NR⁷ and S(O)_m and that can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl and aryl-(C₁-C₄)-alkyl-;

and

R² is hydrogen, (C₁-C₈)-alkyl, which can be substituted by one or more identical or different substituents chosen from hydroxyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkyl-S(O)_m⁻, R⁵R⁶N and aryl; (C₃-C₉)-cycloalkyl, which can be substituted

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

by one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino; or the radical of a 5-membered to 7-membered saturated heterocyclic ring that contains one or two identical or different hetero ring members chosen from O, NR⁷ and S(O)_m and that can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl and aryl-(C₁-C₄)-alkyl-; or

Sub

D⁵

R¹R²N is a radical, bonded via a ring nitrogen atom, of a 5-membered to 7-membered saturated heterocyclic ring that, in addition to the nitrogen atom carrying the radicals R¹ and R², can contain a further hetero ring member chosen from O, NR⁷ and S(O)_m and that can be substituted by one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl, (C₁-C₄)-alkoxy, R⁸R⁹N, hydroxycarbonyl, (C₁-C₄)-alkoxycarbonyl and R⁸R⁹N-CO-;

C³

R³ is phenyl, which can be substituted by one or more identical or different substituents chosen from halogen, (C₁-C₄)-alkyl, phenyl, CF₃, NO₂, OH, -O-(C₁-C₄)-alkyl, -O-(C₂-C₄)-alkyl-O-(C₁-C₄)-alkyl, (C₁-C₂)-alkylenedioxy, NH₂, -NH-(C₁-C₄)-alkyl, N((C₁-C₄)-alkyl)₂, -NH-CHO, -NH-CO-(C₁-C₄)-alkyl, -CN, -CO-NH₂, -CO-NH-(C₁-C₄)-alkyl, -CO-N((C₁-C₄)-alkyl)₂, -CO-OH, -CO-O-(C₁-C₄)-alkyl, -CHO and -CO-(C₁-C₄)-alkyl;

R⁴ is (C₂-C₅)-alkyl, trifluoromethyl or phenyl, which can be substituted by one or more identical or different substituents chosen from halogen, (C₁-C₄)-alkyl, phenyl, CF₃, NO₂, OH, -O-(C₁-C₄)-alkyl, -O-(C₂-C₄)-alkyl-O-(C₁-C₄)-alkyl, (C₁-C₂)-alkylenedioxy, NH₂, -NH-(C₁-C₄)-alkyl, N((C₁-C₄)-alkyl)₂, -NH-CHO, -NH-CO-(C₁-C₄)-alkyl, -CN, -CO-NH₂, -CO-NH-(C₁-C₄)-alkyl, -CO-N((C₁-C₄)-alkyl)₂, -CO-OH, -CO-O-(C₁-C₄)-alkyl, -CHO and -CO-(C₁-C₄)-alkyl;

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Sub
05
C3
~~R⁵ and R⁶ are identical or different radicals chosen from hydrogen and (C₁-C₄)-alkyl; or the group R⁵R⁶N is a radical, bonded via a ring nitrogen atom, of a 5-membered to 7-membered saturated or unsaturated heterocyclic ring that, in addition to the nitrogen atom carrying the radicals R⁵ and R⁶, can additionally contain as a further hetero ring member an oxygen atom, a group S(O)_m or a nitrogen atom and that can carry on ring carbon atoms one or more identical or different substituents chosen from (C₁-C₄)-alkyl, hydroxyl and amino and that can carry on a ring nitrogen atom a radical R⁷;~~

~~R⁷ is hydrogen, (C₁-C₄)-alkyl, aryl-(C₁-C₄)-alkyl-, hydroxy-(C₁-C₄)-alkyl, hydroxycarbonyl-(C₁-C₄)-alkyl-, ((C₁-C₄)-alkoxycarbonyl)-(C₁-C₄)-alkyl, R⁸R⁹N-CO-(C₁-C₄)-alkyl-, R¹⁰-SO₂- or aryl; where R⁷, if this group is present on a piperazino radical representing R¹R²N, cannot be carbocyclic aryl or carbocyclic aryl-(C¹-C⁴)-alkyl;~~

~~R⁸ and R⁹ are identical or different radicals chosen from hydrogen and (C₁-C₄)-alkyl;~~

~~R¹⁰ is (C₁-C₄)-alkyl, aryl or R⁸R⁹N;~~

~~aryl is phenyl, naphthyl or heteroaryl, all of which can be substituted by one or more identical or different substituents chosen from halogen, (C₁-C₄)-alkyl, phenyl, CF₃, NO₂, OH, -O-(C₁-C₄)-alkyl, O-(C₂-C₄)-alkyl-O-(C₁-C₄)-alkyl, (C₁-C₂)-alkylenedioxy, NH₂, -NH-(C₁-C₄)-alkyl, -N((C₁-C₄)-alkyl)₂, -NH-CHO, -NH-CO-(C₁-C₄)-alkyl, -CN, CO-NH₂, -CO-NH-(C₁-C₄)-alkyl, -CO-~~

~~N((C₁-C₄)-alkyl)₂, -CO-OH, -CO-O-(C₁-C₄)-alkyl, -CHO and -CO-(C₁-C₄)-alkyl;~~

Sub
05

heteroaryl is the radical of a monocyclic 5-membered or 6-membered aromatic heterocycle or of a bicyclic 8-membered to 10-membered aromatic heterocycle, each of which contains one or more identical or different ring heteroatoms chosen from N, O and S;

03

m is 0, 1 or 2;

or a stereoisomeric form of a compound of formula I,

or a mixture of stereoisomeric forms of compounds of formula I in all ratios,

or a physiologically tolerable salt of a compound of formula I,

or a physiologically tolerable salt of a stereoisomeric form of a compound of formula I.

I. Status of the claims

Claims 1-8, 10-15, and 17-23 are pending in this application. Claims 1 and 2 have been amended to correct a typographical error in the definition of the radical R⁵R⁶N, replacing the second appearance of the word "saturated" with "unsaturated." Support for this amendment can be found in the specification at page 5, line 16. Claim 15 has been amended to more clearly define the subject matter of the invention.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com